

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently in light of the following discussion is respectfully requested.

New Claim 15 has been added as supported by Claim 1 as originally filed.

No new matter has been added.

Claims 1-7 and 9-15 are active.

The present invention as set forth in **Claim 1** relates to a dye-sensitized solar cell comprising:

a semiconductor electrode containing a dye and a carboxylic compound, the carboxylic compound being at least one acid selected from the group consisting of acetic acid ($\text{CH}_3\text{CO}_2\text{H}$), propionic acid ($\text{CH}_3\text{CH}_2\text{CO}_2\text{H}$), 3-bromopropionic acid ($\text{BrCH}_2\text{CH}_2\text{COOH}$), benzoic acid ($\text{C}_6\text{H}_5\text{CO}_2\text{H}$) and butyric acid ($\text{CH}_3\text{CH}_2\text{CH}_2\text{CO}_2\text{H}$), the dye and the carboxylic compound being carried on a surface of the semiconductor electrode;

a counter electrode; and

an electrolyte composition provided between the semiconductor electrode and the counter electrode, and containing an electrolyte that contains iodine and **molten salt of iodide**.

New Claim 15 relates to the dye-sensitized solar cell according to claim 1, wherein the carboxylic compound is at least one acid selected from the group consisting of propionic acid ($\text{CH}_3\text{CH}_2\text{CO}_2\text{H}$) and 3-bromopropionic acid ($\text{BrCH}_2\text{CH}_2\text{COOH}$).

Kang uses a I^-/I_3^- **acetonitrile solution** (see page 3049, right column second paragraph, lines 2 and 3, and 3rd paragraph, lines 5 and 6). However, a solution of an iodine salt in a solvent such as acetonitrile (dissolved salt of iodine), is **different from a molten salt of iodine** as claimed. Compare also to the preparation of electrolyte exemplified at page 33, lines 1-5 of the specification. Thus, the present invention is not anticipated by Kang.

Replacing the solution of an iodine salt in a solvent such as acetonitrile of Kang with a liquid electrolyte composition as in Gaudiana (page 9, [0080], lines 8-9) would change the principle of operation of Kang. If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification (*In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)). Kang wants to investigate unstable photocurrent-voltage curves of a dye coated TiO_2 electrode in I^-/I_3^- acetonitrile solution. See page 3049, right column second paragraph, lines 1-3. Thus replacing the I^-/I_3^- acetonitrile solution of Kang with a liquid electrolyte composition of Gaudiana would render the dye coated electrode of Kang not useable and thus unsatisfactory for their purpose. Thus, there is no suggestion or motivation to make the proposed modification.

The compounds discussed at col. 8, starting at line 33 are not viscosity lowering agents but are the actual electrolytes. However, the present invention according to Claim 5 requires the presence of the electrolyte which is a molten salt of iodine and a viscosity lowering agent. There is no disclosure or suggestion in Wariishi of a combination of an electrolyte which contains a molten salt of iodine and a viscosity lowering agent.

Even if the Examiner could find a references having such combination, including a viscosity lowering agent in Kang, with all due respect, makes no sense. Kang already uses a solution in acetonitrile. Such solution has already a low viscosity.

Further, Gaudiana mentions nothing about “carboxylic compound being at least one acid selected from the group consisting of acetic acid ($\text{CH}_3\text{CO}_2\text{H}$), propionic acid ($\text{CH}_3\text{CH}_2\text{CO}_2\text{H}$), 3-bromopropionic acid ($\text{BrCH}_2\text{CH}_2\text{COOH}$), benzoic acid ($\text{C}_6\text{H}_5\text{CO}_2\text{H}$) and butyric acid ($\text{CH}_3\text{CH}_2\text{CH}_2\text{CO}_2\text{H}$)” as claimed. Paragraph [0051] of Gaudiana et al mentions dyes that have carboxyl groups as functional groups. However, there is no disclosure of “carboxylic compound being at least one acid selected from the group consisting of acetic acid ($\text{CH}_3\text{CO}_2\text{H}$), propionic acid ($\text{CH}_3\text{CH}_2\text{CO}_2\text{H}$), 3-bromopropionic acid ($\text{BrCH}_2\text{CH}_2\text{COOH}$), benzoic acid ($\text{C}_6\text{H}_5\text{CO}_2\text{H}$) and butyric acid ($\text{CH}_3\text{CH}_2\text{CH}_2\text{CO}_2\text{H}$)” as claimed.

Thus, Gaudiana et al. fails to disclose or suggest “... the carboxylic compound is at least one acid selected from the group consisting of acetic acid, propionic acid, 3-bromopropionic acid, benzoic acid and butyric acid, ...,” as recited in Claim 1.

Likewise, Wariishi et al. fails to disclose or suggest at least “... the carboxylic compound is at least one acid selected from the group consisting of acetic acid, propionic acid, 3-bromopropionic acid, benzoic acid and butyric acid, ... ,” as recited in Claim 1.

Regarding **new Claim 15**, Kang et al, Gaudiana et al and Wariishi et al fail to disclose or suggest that propionic acid ($\text{CH}_3\text{CH}_2\text{CO}_2\text{H}$) and 3-bromopropionic acid ($\text{BrCH}_2\text{CH}_2\text{COOH}$) are carried on a surface of the semiconductor electrode.

Kang only adds acetic acid, butyric acid or benzoic acid to a acetonitrile solution containing I^-/I_3^- .

Further, Kang does not disclose the use of a molten salt of iodine. A solution of an iodine salt in a solvent such as acetonitrile (dissolved salt of iodine), is **different from a molten salt of iodine** as claimed. Thus, the present invention is not anticipated by Kang.

Gaudiana et al and Wariishi et al fail to disclose that propionic acid and 3-bromopropionic acid are carried on a surface of the semiconductor electrode and thus do not cure the defects of Kang.

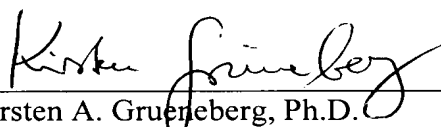
Therefore, the rejections of the claims over Kang et al, Kang et al in view of Gaudiana et al and Kang et al in view Wariishi et al are believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of these rejections is respectfully requested.

This application presents allowable subject matter, and the Examiner is kindly requested to pass it to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

Respectfully submitted,

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